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United States Patent [19]**Unuma et al.**[11] **Patent Number:** **5,483,630**[45] **Date of Patent:** **Jan. 9, 1996**

[54] **METHOD AND APPARATUS FOR REPRESENTING MOTION OF MULTIPLE-JOINTED OBJECT, COMPUTER GRAPHIC APPARATUS, AND ROBOT CONTROLLER**

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[51] **Int. Cl.⁶** **G06T 13/00**

[52] **U.S. Cl.** **395/152; 345/122**

[58] **Field of Search** 395/152, 87, 81, 395/96; 340/724, 725, 726; 358/93; 345/122

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[57] **ABSTRACT**

A bending angle of each joint of a multiple-jointed object is represented with a function expressed independently of a length between joints of the object. Based on the function, contour data is produced for a motion of each joint, which is then displayed on a screen. With this provision, it is unnecessary to generate again functions each time the size of the object changes. Namely, the functions are independent of the size of the object. Since parameters of the functions can be altered to add characteristics to changes in the bending angles the respective joints, the object is actuated in an action having an emotional expression.

35 Claims, 44 Drawing Sheets